

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TENNESSEE  
AT KNOXVILLE**

<b>TWIN K CONSTRUCTION, INC.,</b>	)	
	)	
<b>Plaintiff/Counter-Defendant,</b>	)	
	)	
<b>v.</b>	)	<b>Case No. 3:21-cv-00074-KAC-DCP</b>
	)	
<b>UMA, GEOTECHNICAL CONSTRUCTION, INC.,</b>	)	<b>Judge Katherine A. Crytzer</b>
	)	<b>Magistrate Judge Debra C. Poplin</b>
	)	<b>JURY TRIAL DEMANDED</b>
<b>Defendant/Counter-Plaintiff,</b>	)	
	)	
<b>AND</b>	)	
	)	
<b>CLAY BRIGHT, in his official capacity as Commissioner of Tennessee Department of Transportation (TDOT),</b>	)	
	)	
	)	
<b>Third-Party Nominal Defendant.</b>	)	

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**UMA GEOTECHNICAL CONSTRUCTION, INC.'S  
EXPERT WITNESS DISCLOSURE**

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UMA Geotechnical Construction, Inc. ("UMA"), by and through its undersigned counsel and pursuant Rule 26(a)(2) of the Federal Rules of Civil Procedure and the Amended Scheduling Order (D.E. 36) in this case, serves the following disclosure of witnesses who UMA may use at trial to present evidence under Federal Rules of Evidence 702, 703, or 705.

1. Pursuant to Federal Rule of Civil Procedure 26(a)(2)(B), the persons who have been retained or specially employed to provide expert testimony in this case and who have prepared a written report are:

- a. Marvin L. House  
Professional Construction Consulting, Inc.  
1323 Indian Ridge Road  
Blaine, Tennessee 37709

A copy of Mr. House's written report is attached to this disclosure as **Exhibit A**.

2. Pursuant to Federal Rule of Civil Procedure 26(a)(2)(C), the persons who may be expected to provide expert testimony at trial, but who are not required to provide a written report are:

- a. J. David Gibbs, PE (formerly of Teasley Services Group, LLC)  
NOLCOR, LLC  
1205 Broadgate Drive  
Franklin, TN 37067

Mr. Gibbs is a licensed professional engineer and is expected to provide expert testimony at trial based on his knowledge and experience as an engineer and consistent with the work he performed for the project at issue. The subject matter on which he is expected to present evidence includes the design work he performed as part of UMA's scope of work for the project including the Secondary Wall. A summary of the facts and opinions on which Mr. Gibbs is expected to testify includes that: (1) the design provided by Mr. Gibbs and Teasley Services Group, LLC met the applicable standard of care and the requirements of the project; (2) the abrupt ends of the Secondary Wall were not caused by any defect or deficiency with the design; (3) that the proposed design to address the ends of the Secondary Wall prepared by Mr. Gibbs and Teasley Services, Group, LLC met the applicable standard of care and the requirements for the project; and (4) that the amounts charged for Mr. Gibbs' work is reasonable.

Respectfully submitted,

/s/ Joseph L. Watson

Joseph L. Watson (TN BPR No. 030397)  
Kevin T. Elkins (TN BPR No. 033280)  
WALLER LANSDEN DORTCH & DAVIS LLP  
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*Attorneys for UMA Geotechnical Construction, Inc.*

**CERTIFICATE OF SERVICE**

I hereby certify that on January 14, 2022, a copy of the foregoing document was served via email upon the following:

Brian C. Quist  
Quist, Fitzpatrick & Jarrard, PLLC  
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/s/ Joseph L. Watson



# **Professional Construction Consulting, Inc.**

**Project Time Analysis – CNT 234 Cumberland County – US 70 Slide**

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## **Project Engagement Details**

Emergency Slope repair – Tennessee Department of Transportation (“TDOT”)

Project: CNT 234 Cumberland County- US70 Slide

General Contractor- Twin K Construction, Inc. (“Twin K”)

Sub-Contractor-Team UMA, Geotechnical Construction, Inc. (“UMA”)

Pc2 Client- Waller Lansden Dortch & Davis, LLP (“Waller”)

Professional Construction Consulting, Inc. (“PC2”) was contacted by Waller Lansden Dortch & Davis, LLP (“Waller”) to become engaged in a dispute between a general contractor and a subcontractor concerning construction of a slope repair in middle Tennessee. PC2 was asked to review documents and render an opinion as to whether delays associated with the project were the responsibility of the general contractor, Twin K, or the slope reinforcement subcontractor, UMA.

## **Documents/Evidence Reviewed**

Numerous documents (2.86 GB) were received by PC2 on 11/23/21. Those documents came from three sources:

1. Twin K
2. UMA
3. TDOT

Additionally, there was a 12/21/21 Zoom call with UMA representatives and a 12/23/21 in person meeting to discuss details and history of the project. Attendees at that meeting were:

Marv House PC2

Clay Griffin PC2

Brian DeSpain UMA

Luke McFetters UMA

Gary Jordan UMA

Chris Jordan UMA

Following our review, a report was requested stating our findings and conclusions.

Project History

TDOT bid the project on 6/21/19 as an emergency repair project to a failed slope along US70 in Cumberland County Tennessee. Twin K was the successful bidder and received a contract on 7/12/19 and a fully executed contract on 7/19/19. A notice to proceed was issued by TDOT on 7/26/19 and a pre-construction meeting, which is a prerequisite to starting work, was set by TDOT for 7/25/19. Unlike most TDOT construction projects, this project had a fixed completion date instead of being a “working day” or “calendar day” project.

UMA submitted a four-page proposal #19-49080 to Twin K on 6/21/19 via fax and/or email for the project. Twin K on 7/24/19 sent a proposed subcontract agreement to UMA. Section 3 “Time of Performance” of that subcontract agreement is noted below:

## Subcontractor Agreement

THIS AGREEMENT, made July 24<sup>th</sup>, 2019

Twin K Construction, Inc.

Hereinafter called the Contractor, and:

UMA, Geotechnical Construction, Inc.

Hereinafter called the Subcontractor.

### CNT234 Cumberland County - US70 Slide

For the consideration hereinafter named, the said Subcontractor covenants and agrees with said Contractor, as follows:

**FIRST.** The Subcontractor agrees to furnish & deliver material for various projects as mutually agreed under tis general Subcontractor Agreement. Each project to be specifically defined in the Attachment: Schedule A Scope of Work

### Project Scope: Schedule A Scope of Work (Attached)

Whereas, the Subcontractor has read and is familiar with all parts and provisions of the Prime Contract and all respective rights, powers, conditions and liabilities of the Contractor and the Owner:

Now therefore, in consideration of the premises and the mutual covenants herein contained, the parties agree as follows:

The parties hereby agree that the portion of the Prime Contract specified above shall be performed by the Subcontractor in accordance with the provisions stated herein. All terms and conditions of the Prime Contract between the Owner and The Contractor are incorporated herein by reference and binding on the Subcontractor. Work to be performed, including but not limited to all labor, equipment, materials, tools, supplies, transportation, fuel, utilities, facilities and services(except those expressly provided for in the Contract Documents to be furnished by the Contractor or the Owner)are as follows in attached **Schedule A**.

### 2. Items to be furnished by Contractor:

As Stated in Schedule A

### 3. Time of Performance

The Subcontractor hereby agrees that the work under this subcontract is to be commenced, constructed, maintained and completed in accordance with the project schedule to be issued by the Contractor to the Subcontractor, such schedule will be mutually agreed upon and shown in Schedule A. Subcontractor acknowledges that at the time of execution of the Subcontract, Contractor is in the process of developing a detailed Working Schedule pursuant to a requirement of the Prime Contract and therefore, commencement and completion dates of the Subcontractor's work as well as

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sequences and interrelationships between the Subcontractors Work and the work of other subcontractors have not been fully determined. Nevertheless, Subcontractor warrants that the Subcontract Price takes into account the necessary sequencing and scheduling of its workforces and materials to accommodate completion of the Project by the Contractor's planned completion date. Contractor and Subcontractor may, by mutual agreement, make reasonable modifications to the Working Schedule as the Project progresses.

Subcontractor shall furnish any information requested by Contractor required for scheduling, monitoring or expediting the Work.

Upon request of Contractor, Subcontractor shall have a representative present at Progress Meetings whether or not Subcontractor's forces are performing on the Project. Any such required meetings for Subcontractors will be given 72 hours' notice. Subcontractors shall prosecute its work in a prompt and diligent manner in accordance with Contractor's Working Schedule, without delaying or hindering Contractor's work or the work of other contractors or subcontractors. Subcontractor shall coordinate the work covered by this Agreement with that of all other contractors, subcontractors and of the Contractor, in a manner that will facilitate the efficient completion of the entire work.

In the event Subcontractor fails to maintain its part of the Contractor's Working Schedule as shown in exhibit A, it shall, without additional compensation, accelerate the Work as contractor may direct until Subcontractor's work is in accordance with such schedule. Contractor shall have complete control of the premises on which the work is to be performed and shall have the right to decide the time and order in which various portions of the work shall be installed and the relative priority of the work of subcontractor on the site. In order to secure the execution of the Subcontractor's work within the time specified, the contractor shall have the right, in addition to all other rights, to supplement Subcontractor's performance and/or perform all or any portion of Subcontractor's work. Any supplemental work or work performed for, or on behalf of, the subcontractor shall be at the Subcontractor's sole expense, and the Contractor shall deduct from the Contract Price all such expenses, including but not limited to liquidated damages. Contractor will provide Subcontractor weekly updates on project progress and any deficiencies noted. Prior to requiring any action by Subcontractor and prior to supplementing the Subcontractor's work, the Contractor shall give the Subcontractor 72 hours' written notice to commence and continue correction of any noted deficiencies.

#### 4. COMPENSATION, PAYMENTS, AND FINAL PAYMENT

Contractor agrees to pay Subcontractor for expeditious, correct and complete performance of the Subcontract, on a per unit cost basis in accordance with attached Schedule "A" Partial payments will be made to the Subcontractor within (15) days of receipt of payment by Contractor from Owner, but no later than 45 days from the receipt of a properly submitted pay application and is not conditional upon any receipt of payment from the Owner. Payments will be based on estimates as work progresses made by the Contractor and/or Owner. If Contractor shall fail to make payment to Subcontractor when due, Subcontractor may, upon seven days' written notice to Contractor, stop the work until payment of the amount owing has been received by Subcontractor. The contract time and contract sum shall be adjusted to account for the Subcontractor's reasonable costs of shutdown, de-mobilization, delay, re-mobilization and any other reasonable costs associated with having to stop work.



This subcontract section indicates that a “project schedule” will be issued by Twin K and included in schedule A of the subcontract. This section further goes on to indicate at the time of execution of the subcontract that Twin K was in the process of developing a “working schedule” for the project and would require UMA’s input. Neither the project schedule, nor information about the working schedule was included with the Twin K subcontract when received by UMA.

Additionally, the subcontract agreement under Schedule A Clarifications: states “*Subcontractor will need to be provided a minimum bench width of 15 feet at all drilling locations for staging equipment. The working bench will need to consist of suitable native site soils or compacted structural fill for supporting equipment*”.

An initial Twin K schedule was prepared on 7/16/19 and sent to UMA on 7/22/19 with instructions that it was a draft and to not extend it to anyone else. This schedule allotted 7 days for UMA wall work per lift, 20 days for front wall and no time for drain work. This schedule showed a 11/20/19 completion. UMA did not respond to this schedule based on Twin K’s instructions. There were various discussions between Twin K and UMA as to the schedule being unrealistic and needed to be modified.

Twin K submitted a 7/29/19 project schedule to TDOT on 7/30/19 which indicated a 1/21/20 completion date. Shown on the schedule are various delays, and along with the schedule is a 7/30/19 letter from Twin K to TDOT requesting a 51-day extension of time with details of their rationale. None of the delay time was attributable to UMA. This schedule included a 2 working day duration per lift for excavation by Twin K. All excavation work on the project was Twin K’s responsibility, and each lift must be excavated before the UMA work, so the Twin K work was critical to the project. It also shows a 21 working day duration for UMA’s work per each of the six lifts and indicates working seven days per week. It is worth noting that all other activities on this schedule are shown to work five days per week except for the UMA work on the sloped wall. This schedule also shows 12 working days to install the horizontal drains and 8 working days to install the “front” or shoulder wall on the project. These items were also part of the UMA subcontract agreement.

UMA proceeded with design and submittals immediately after receiving the subcontract but concerned about the project schedule, emailed Twin K on 8/20/19 that they would need 2-3 weeks per lift if rock was encountered at twenty feet or less in the soil nail borings, and 4-6 weeks per lift in deeper rock. Both durations included working five days per week and Saturdays as necessary. We have not seen any schedules or correspondence from Twin K responding to this schedule input from UMA. UMA executed the subcontract agreement on 9/25/19, and Twin K executed it on 9/26/19.

On 9/26/19, Twin K sent notice to TDOT claiming a 97 day delay unrelated to UMA or Twin K.

The next schedule from Twin K to UMA was dated 10/4/19 and sent to UMA the same day. UMA responded by email on 10/7/19 with “*I’m not sure you are carrying enough time for the drains; I’m thinking at a min. 1 day a drain to be safe*”. Twin K submitted this schedule to TDOT on 10/9/19 showing a 4/12/20 completion date without incorporating any of the input



provided by UMA. Twin K claimed 147 days of delay with this schedule, again none relating to UMA.

A third schedule was prepared by Twin K dated 10/16/19 with a 4/10/20 completion date and sent to TDOT on 10/26/19. It was sent to UMA on 11/26/19. This schedule reduced UMA wall work to 12 days per lift, again ignoring UMA input.

A fourth schedule by Twin K was prepared on 10/21/19 with the same UMA durations as shown on the 10/16/19 schedule. This schedule shows a completion date of 3/15/20. It was sent to UMA on 1/8/20.

Twin K emails to TDOT on 1/20/20, a schedule showing a 6/10/20, completion date. TDOT hires ARCADIS who evaluate the schedule and TDOT responds to Twin K about the schedule and notes it is 208 days after the project completion date. Twin K responds it is 147 days for utility relocation, 37 days for unacceptable baseline schedule and 20 days for TDOT submittal reviews. None of which are associated with any UMA delay.

TDOT released Twin K's work to begin on 8/22/19 and on 10/9/19 Twin K started excavation of the first bench. UMA's work was released to begin with a 10/14/19 email from TDOT. The attached production summary for Twin K's excavation activities is derived from the TDOT daily reports, and summarizes activities related to wall construction throughout the project. Listed below are the start and finish dates of the actual Twin K bench excavation operation which was scheduled to be 2 days each or 12 working days total on Twin K's schedules. The work per the TDOT reports took 56 working days or approximately 75 calendar days:

- |  |                 |
|--|-----------------|
| 1. Bench 1 started 10/9/19 completed 11/8/19 | 25 working days |
| 2. Bench 2 started 12/2/19 completed 12/4/19 | 3 working days  |
| 3. Bench 3 started 1/1/20 completed 1/13/20  | 9 working days  |
| 4. Bench 4 started 2/3/20 completed 2/17/20  | 11 working days |
| 5. Bench 5 started 2/25/20 completed 2/29/20 | 5 working days  |
| 6. Bench 6 started 3/3/20 completed 3/5/20   | 3 working days  |

Construction of a soil nailed retaining wall involves several distinct processes that must be sequenced and carefully coordinated to achieve efficient installation. The general processes of soil nailed wall construction are:

1. Excavation of a limited portion of the wall face by the General Contractor
2. Drilling near-horizontal holes for the nails
3. Inserting the steel reinforcing bars
4. Grouting to fill the holes and encapsulate the bars
5. Wall face prep – setting the face re-steel and vertical drain materials.
6. Applying shotcrete to the wall face (typically in two layered applications)

It is essential that the sequence and timing of these processes be controlled. Excavated wall face will fail if nailing lags far behind; holes collapse if not grouted soon after drilling; shotcrete must be applied and set before the next bench is excavated. The general contractor Twin K was

responsible for all excavating on the project. The drilling, grouting, wall prep, and shotcrete are typically performed by the geotechnical contractor. The ready-mix supplier (which in this case was the General Contractor Twin K) also fills a critical role in timely delivery of shotcrete. In a well-choreographed operation, the resources assigned to each process is balanced so the wall construction moves at a fairly uniform rate without any process running ahead or lagging behind. Of course, there are many factors that disrupt this ideal flow of work, e.g., weather, poor communication, inadequate resources, unforeseen site conditions, poor bench support issues or simple lack of cooperation between parties.

To gain an understanding of the wall construction activities, their sequence, and delays encountered, the daily production reports of UMA and TDOT were examined and summarized. These logs provide insight into which of the processes listed above were active on each day and where on the site those efforts were applied. The production summary is attached, and based on our professional opinion, some of the conditions that affected production were:

1. The supplier of shotcrete, Twin K contributed to production delays and inefficient sequencing.
  - a. Daily reports cite significant shotcrete delivery delays or non-availability on at least 10 days
2. The bench support on numerous occasions was insufficient and not corrected by Twin K.
3. Diversion ditches were requested by UMA to control surface water and were not installed by Twin K.
4. UMA requested rock support numerous times for their equipment as well as concrete truck delivery. Twin K was contractually responsible for bench maintenance and site access, but was often unavailable to provide this critical support
5. Rain and drying days accumulated throughout the project but were not added to the construction time.

In reviewing the production log from the project records, the UMA soil nailing and shotcrete work progressed as follows:

- |  |                 |
|--|-----------------|
| 1. Bench 1 started 10/24/19 completed 11/29/19 | 27 working days |
| 2. Bench 2 started 12/3/19 completed 12/31/19  | 20 working days |
| 3. Bench 3 started 1/10/20 completed 1/31/20   | 20 working days |
| 4. Bench 4 started 2/11/20 completed 2/25/20   | 13 working days |
| 5. Bench 5 started 2/26/20 completed 3/3/20    | 5 working days  |
| 6. Bench 6 started 3/4/20 completed 3/11/20    | 6 working days  |
| 7. All shotcrete work was completed by 3/11/20 |                 |

Twin K schedules consistently indicated to TDOT that UMA's work would be completed in 21 calendar days per lift or 126 calendar days total. UMA had requested durations based upon rock depths between 20 and 70 feet. Actual rock averaged 40 feet and based upon this and what UMA requested on 8/20/19, the schedule should have allowed 4.5 weeks per lift or 189 calendar days. Based on the logs, it was completed in 128 calendar days or 61 calendar days ahead of

what UMA quoted prior to signing a contract. This does not adjust for lost time due to weather (UMA documented 20 rain days through 2/18/20), shotcrete delivery issues or bench problems, of which there were many, and all Twin K's responsibility.

After TDOT received the first Twin K schedule on 7/30/19 showing a completion of 1/21/20, TDOT consistently responded that they first needed a schedule showing the contract completion date of 11/15/19 before they could entertain ANY extensions of time from that date. After numerous discussion and emails in an effort to accommodate that request, the TDOT documents show that Twin K submitted four schedules on 10/9/19, 10/16/19, 10/21/19 and 1/20/20 showing delays and completion dates of 4/12/20, 4/10/20, 3/15/20 and 6/10/20 respectively. TDOT reaffirmed that they first needed a schedule showing the original completion date of 11/15/19. Finally, on 11/15/19, Twin K submitted a schedule showing a 11/15/19 project completion date as requested, with fabricated durations to achieve that 11/15/19 date. In various correspondence Twin K admitted this was NOT achievable and they did not bid the project including liquidated damages as they suggested other general contractor bidders did in order to be compensated for the liquidated damages associated with schedule overrun. On 11/27/19 a meeting was held at TDOT, and the minutes confirm the following statement by Twin K *"Mr. Kaleb Howard (Twin K) stated the schedule does not allow time to complete the project and had talked to TDOT Headquarters' personnel prior to the job being awarded"*

After a review of the delays and schedules submitted, TDOT responded on 2/3/20 that they disagreed and would begin withholding \$1,000/day in liquidated damages per the contract for late completion. Twin K appealed but immediately turned to UMA and claimed them responsible for any late completion. On May 5, 2020, the District Engineer, Bo Hoskins, awarded 25 additional days to the Twin K contract resulting from the six issues that Twin K had alleged against TDOT, none of which implicated UMA for delaying the project. Twin K acknowledged in their 7/30/19 letter *"Twin K Construction did not inflate our pricing by an additional 10.8% or \$426,532.44, like the second and third bidder, to cover liquidated damages and allow the project to linger for months and months at taxpayer expense."*

Following the Twin K excavation, soil nail/ shotcrete work which was clearly the critical path for the project, secondary wall construction and lower horizontal drains by UMA were completed with minor issues. When those were completed and Twin K finished their back filling operations behind the secondary wall, it was time to install the upper drains which could have begun on 6/11/20. On 10/07/19, UMA asked for one day per drain duration be included in the schedule or 23 days for lower drains and 23 days for upper drains. Twin K never included any of the UMA's requested durations for the drain work in their schedules. The upper drains would be the last of UMA's work for the project. On 6/11/20 Twin K put a hold on UMA installing the upper drains since it would involve a traffic switch and some adjustment of the concrete barriers and signage involving traffic flow. Additionally, the end of wall redesign added work, which Twin K chose to complete without UMA, would require Twin K resources. After approximately fourteen weeks, when UMA's initial work was complete, Twin K allowed UMA to return to the site to

complete their final work of the upper horizontal drains. This work took 9 calendar days. Listed below are key dates for work following the secondary wall construction:

1. UMA was ready to start the upper drains on 6/11/20 but was put on hold due to end of wall redesign and construction and traffic changes.
2. Twin K instructed TDOT and UMA on 8/6/20 to disregard the UMA 7/8/20 end of wall redesign submittal.
3. Twin K met with TDOT on 9/1/20 to discuss the end of wall redesign.
4. Twin K started the end of wall work on 9/25/20 which took approximately 2 days.
5. Traffic was shifted on 10/1/20.
6. UMA was allowed to restart its work and installed the upper drains between 10/5/20 and 10/13/20.
7. Project was Substantially Complete on 10/21/20.

### **Findings:**

#### **A. Delays:**

After reviewing the documents provided by the parties and the events involved with this project, it is our professional opinion that UMA should not be responsible for the number of days of Liquidated Damages alleged by Twin K. Given that the UMA proposal provided on 6/21/19 was not schedule driven or date committed and only stated "... sufficient time to complete the project as described above," this does not give Twin K the right to pass the contract completion requirements solely on UMA. Further, prior to contract signing on 8/20/19 and 10/17/19, UMA advised Twin K of the durations necessary to complete their work and Twin K never incorporated those durations in any schedules provided to TDOT. It appears that Twin K "assumed" up until February 2020 they would be granted time extensions to an emergency project, which they knew could not be completed in the time allotted by TDOT.

With UMA providing production durations prior to execution of their contract, and then meeting or beating those durations, we do not support any liquidated damage assessment against UMA for production issues. Further, there were other numerous delays in addition to the excavation (weather, Twin K shotcrete delivery, lack of sufficient bench maintenance by Twin K etc.) that would shift responsibility for delays to Twin K not UMA.

UMA did contribute to some delay with periodic breakdowns of their equipment at various times. The records indicated this resulted in 11 days which we believe UMA is responsible.

**B. Change Order #3:**

On 10/16/20 UMA submitted Change Order request #3 to Twin K in the amount of \$180,255.51 for “idle” equipment time 9/17/19 to 10/24/19 during design review at the beginning of the project (\$41,629) and 6/12/20 to 10/2/20 for delaying upper drain installation at the end of the project (\$138,626). In reviewing the project records, it is our professional opinion that the second delay is wholly the responsibility of Twin K since they elected to perform the added end of wall redesign work themselves and not switch traffic for their own benefit. TDOT records indicate the traffic was not shifted until 10/2/20, denying UMA access to install the upper drains. We see no documentation into why Twin K delayed this work. It is our professional opinion therefore that Twin K should be responsible for the UMA cost to hold idle equipment at the site for these 113 days.

**C. End of wall issue:**

From Twin K’s legal complaint against UMA, dated 3/8/21;

22. In the summer of 2020, it was revealed that the as-built Secondary Wall needed some additional features at each end of the wall, and so a redesign by TDOT was requested. Unless TDOT hereafter agrees the need for the redesign is not the fault of UMA, the need for the redesign is the fault of UMA, as it was UMA that was to properly design the Secondary Wall and to properly construct it.

This issue is also referred to as “Secondary Wall Re-design” in some of the project documentation. Basically, UMA was unable to construct the wall per the approved design because Twin K excavated ramps within the footprint of the wall on both ends. This left an abrupt termination rather than the smooth transition to existing contours that was designed. In a site meeting on 6/15/20, TDOT required an engineered re-design for the end of wall transitions based on the new (excavated) contours.

The only reason that the redesign was necessary is Twin K’s poor planning of the excavation and grading which, per the subcontract agreement, were Twin K’s responsibility. UMA’s design for the wall clearly shows a taper at each end, tying into existing ground contours. Twin K ignored the designed end of wall transitions when it excavated access ramps too close to the ends of the secondary wall. Of course, the wall was not there when the ramps were excavated, but Twin K was also responsible for the surveying and layout of the site and should have left ample space for the wall transitions in accordance with UMA’s design drawings.

In its 3/19/21, letter to TDOT requesting delay time, Twin K claims that that the approved plans did not provide direction on how the ends of the wall would terminate and tie into the existing slopes. However, the UMA wall design, approved by TDOT on 9/11/19, clearly shows the wall



to be tapered into existing contours. Unfortunately, the existing contours were dramatically altered by Twin K when they excavated directly at the wall ends. TDOT documented this poorly placed excavation, as seen in the following excerpt from their event timeline.

**May 28, 2021 email from Travis Smith at TDOT regarding event timeline**

6/15/2020 entry states: *"Site visit to observe and discuss issues at ends of wall. Wall stopped abruptly without transitioning to finished grade resulting in the ends of the wall being open. Twin K acknowledged during the meeting that there had been some additional excavation on the east end of the wall and their haul road was placed at the west end of the wall. This additional excavation at the wall ends resulted in altered site topography that was not accounted for on the approval wall plans. Prior to this meeting the GES had not been informed that excavation beyond what was necessary to construct the wall had occurred and the GES had not received any revised or modified wall plans that would address an altered groundline. The contractor was informed by Operations (Construction) that the wall was not constructed as shown on the approved plans and it would be the responsibility of the contractor to submit an acceptable end transition. It was agreed between Operations and the GES that due to the nature of the site and the function of the wall, that the end transitions would have to be an engineered solution that would provide stability without compromising the existing wall integrity."*

Twin K hired an engineering firm (Neel-Schaffer) to assess the problem. The following is excerpted from the engineer's report, dated 8/24/20:

The as-built contours were found to be different than the existing ground contours shown on UMA's drawings. The as-built contours place the top of wall elevation at 1748 and the bottom of wall elevation at 1735 with a resulting height of approximately 13 feet rather than the 8 feet as stated above.

The as-built contours were "different than the existing ground contours shown on UMA's drawings" because Twin K cut the access ramps exactly where UMA's design called for the tapered transitions.

In its letter requesting delay time from TDOT, dated 3/19/21, Twin K claims 90 days of delay from the "Discovery Date" to "Second Redesign approval". It requests another 18 days for the extra work of construction, for a total of 108 delay days. Additionally, in its 3/8/21, legal claim, Twin K claims costs of \$59,074.82 to re-design and construct the modified wall sections. It is our professional opinion that the delay time and costs incurred are not due to UMA's design but are the result of Twin K's errant excavations at the wall ends.

A handwritten signature in black ink, appearing to read 'M. L. House', with a large, stylized initial 'M'.

**Marvin L. House**

Statement of Qualification Attached:

Production Summary Attached:

Resume of Marvin L. House Attached:

Resume of H. Clay Griffin Attached:



Client: UMA Geotechnical Construction, Inc  
Project: CNT 234 Cumberland County- US70 slide

**Statement of Qualifications**

1. The facts or data used in this report were obtained from five sources:
  - a. Twin K documents provided
  - b. UMA documents provided
  - c. TDOT documents provided
  - d. Discussions held during a 12/21/21 Zoom call with UMA
  - e. In person meeting with UMA on 12/23/21
2. My current resume is attached. My qualifications would include my education, employment experience, licensed engineer in fourteen states, Contractor qualifier and memberships.
3. I have no publications in the last ten years.
4. In the last four years I have not testified as an expert at a trial or in a deposition.
5. Through 12/31/21 we have billed \$13,725.
6. Standard hourly rates are:
  - a. Marvin House \$195
  - b. Robert Hillman \$185
  - c. Clay Griffin \$155
  - d. Tony Wheeler \$125
7. Hourly rates at deposition or trial are 1.5 times standard rates
8. Routine out of pocket expenses are billed at cost.

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
09-Oct-19	Begin excavation of first bench: 214+30 to 218+75	No Work
10-Oct-19	Excavate Bench 1: 213+13 to 218+75	No Work
11-Oct-19	No Work	Soil nail verification test at 218+52
12-Oct-19	No Work	No Work
13-Oct-19	No Work	No Work
14-Oct-19	Build 1:1 slope: 214+00 to 218+25. Mark SN locations 214+00 to 218+00	Began drilling SN098 at 214+50. Drill broke after 30'
15-Oct-19	Excavate Bench 1: 218+25 to 218+90. Build 1:1 slope from 217+00 to 218+75.	Drill broken.
16-Oct-19	Excavate and build 1:1 from 218+75 to 219+48	Drill broken.
17-Oct-19	No Work	No Work
18-Oct-19	No Work	No Work
19-Oct-19	No Work	No Work
20-Oct-19	No Work	No Work
21-Oct-19	No Work	No Work
22-Oct-19	No Work	No Work
23-Oct-19	No Work	No Work
24-Oct-19	No Work	Drilled 6 nails (SN098 - 093)
25-Oct-19	No Work	Drilled 1 nail (SN092)
26-Oct-19	No Work	No work
27-Oct-19	No Work	No work
28-Oct-19	No Work	Drilled 5 nails (SN091 - 87); grouted 9
29-Oct-19	No Work	Drilled 12 nails (SN086 - 74); grouted 14
30-Oct-19	*	Rain
31-Oct-19	No Work	Rain
01-Nov-19	*	Drilled 7 nails (SN077 - 069)
02-Nov-19	No Work	Drilled 11 nails (SN069 - 59)
03-Nov-19	No Work	Grouted 4 nails; prep wall from 214+40 to 214+84
04-Nov-19	No Work	Drilled 6 nails (SN058 - 053); prep wall from 214+84 to 215+75
05-Nov-19	No Work	Drilled 7 nails (SN052 - 049); grouted 5
06-Nov-19	No Work	grouted 15
07-Nov-19	No Work	wall prep; rain
08-Nov-19	Completed excavation of Bench 1	wall prep 214+50 to 216+25; Shotcrete 214+45 to 215+40
09-Nov-19	No Work	No work
10-Nov-19	No Work	No work
11-Nov-19	No Work	Drilled 10 nails (SN034 - SN045)
12-Nov-19	No Work	Drill 1 nail (SN033)

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
13-Nov-19	No Work	Drilled 4 nails (SN026 - SN023); wall prep 216+80 to 217+25
14-Nov-19	No Work	Drilled 10 nails (SN022 - SN013); wall prep 216+50 to 217+60
15-Nov-19	No Work	Grouted 11
16-Nov-19	No Work	No work
17-Nov-19	No Work	No work
18-Nov-19	No Work	Drilled 18 nails (SN032 - SN027, SN012 to SN001)
19-Nov-19	No Work	Grouted 23
20-Nov-19	No Work	Grouted 18
21-Nov-19	No Work	wall prep 216+00 to 219+45; shotcrete 215+45 to 216+90
22-Nov-19	No Work	wall prep 217+50 to 219+45; rain
23-Nov-19	No Work	No work
24-Nov-19	No Work	No work
25-Nov-19	No Work	Grouted 6; wall prep 218+50 to 219+42
26-Nov-19	No Work	Wall prep 218+50 to 219+42
27-Nov-19	No Work	Shotcrete 216+90 to 219+25
28-Nov-19	No Work	No work
29-Nov-19	No Work	Nail testing
30-Nov-19	No Work	No work
01-Dec-19	No Work	No work
02-Dec-19	Begin excavation of Bench 2: 214+25 to 219+42	Move equipment for excavation; cutoffs
03-Dec-19	Excavate Bench 2: 214+25 to 219+42	Start on Bench 2; drilled 12 nails (SN100; SN194 - SN184)
04-Dec-19	Completed excavation of Bench 2; 219+00 to 219+42	Drilled 9 nails (SN183 - SN175); grouted 21
05-Dec-19	No Work	Drilled 16 nails; wall prep 214+46 to 215+55
06-Dec-19	No Work	Grouted 22
07-Dec-19	No Work	No work
08-Dec-19	No Work	No work
09-Dec-19	No Work	Drilled 15 nails (SN157 to SN143); wall prep 214+45 to 216+77
10-Dec-19	No Work	Drilled 10 nails (SN142 - SN133); wall prep 214+45 to 216+77
11-Dec-19	No Work	Drilled 9 nails (SN132 - SN124); wall prep 214+45 to 216+50
12-Dec-19	No Work	Drilled 10 nails (SN114 - SN123)
13-Dec-19	No Work	Grouted 2

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
14-Dec-19	No Work	No work
15-Dec-19	No Work	No work
16-Dec-19	Bladed mud from roadway 213+50 to 221+50	Grouted 16
17-Dec-19	No Work	Drilled 7 nails (SN107 - SN113)
18-Dec-19	No Work	Drilled 7 nails (SN99, SN101 - SN106) Spread 20T rip rap at 214+45 to allow bench access.
19-Dec-19	No Work	Wall prep 214+50 to 216+20; Shotcrete test
20-Dec-19	No Work	Grouted 50
21-Dec-19	No Work	No work
22-Dec-19	No Work	No work
23-Dec-19	No Work	Wall prep 218+50 to 216+50
24-Dec-19	No Work	No work
25-Dec-19	No Work	No work
26-Dec-19	No Work	Re-drill 5 nails; grouted 8
27-Dec-19	No Work	Grouted 2
28-Dec-19	No Work	No work
29-Dec-19	No Work	No work
30-Dec-19	No Work	Shotcrete 214+50 to 216+00; wall prep 218+00 to 219+00
31-Dec-19	No Work	Shotcrete 216+00 to 217+85; wall prep 218+00 to 219+00; move equipment off bench
01-Jan-20	Begin excavation of Bench 3: 214+00 to 216+00; Hauled out 54 loads	Nail cutoffs
02-Jan-20	Rain	Rain
03-Jan-20	No Work	No work
04-Jan-20	No Work	No work
05-Jan-20	No Work	No work
06-Jan-20	Bulldozer down	Shotcrete on Bench 2: 217+85 to 219+42
07-Jan-20	Bulldozer down	Nail cutoffs and couplers on Bench 2
08-Jan-20	Excavate Bench 3: 214+50 to 217+50	Waiting on excavation
09-Jan-20	Excavate Bench 3: 214+30 to 219+45; hauling out material. Place rip rap on access ramp.	Waiting on excavation
10-Jan-20	Excavate 218+00 to 219+50; place rip rap	Drilled 6 nails on Bench 3 (SN195, SN286 - 282)
11-Jan-20	No Work	No work
12-Jan-20	No Work	No work
13-Jan-20	Completed Bench 3 with excavation/hauling 218+10 to 219+50	Drilled 12 nails (SN270 - SN281); nail tests
14-Jan-20	*	Grouted 18; wall prep 214+60 to 215+50
15-Jan-20	No Work	Wall prep 214+60 to 215+50
16-Jan-20	*	Drilled 6 nails (SN269 - SN264); grouted 6
17-Jan-20	*	Shotcrete flash 215+35 to 214+60

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

Date	Twin K Activity	UMA Activity
18-Jan-20	No Work	No work
19-Jan-20	No Work	No work
20-Jan-20	Graded access road for lower bench	No work
21-Jan-20	Graded access road for lower bench	Drilled 4 nails (SN260 - SN263)
22-Jan-20	Continue access grading and clearing	Drilled 7 nails (SN259 - SN253)
23-Jan-20	Continue clearing 214+00 to 216+75	Drilled 9 nails (SN252 - SN247; SN244 - Sn246); grouted 14
24-Jan-20	No Work	Wall prep 215+65 to 216+75
25-Jan-20	No Work	Grouted 6; drill broken
26-Jan-20	No Work	Wall prep 216+00 to 218+50; drill broken
27-Jan-20	No Work	Drilled 17 nails (SN243 - 227); grouted 11 and voids.
28-Jan-20	Continued clearing 214+50 to 218+00	Drilled 15 nails (SN226 - SN212); grouted 13
29-Jan-20	Continued clearing 215+00 to 218+00	Drilled 15 nails (SN211 - 197, SN195); grouted 17
30-Jan-20	Continued clearing 214+50 to 218+50	Grouted 4; Wall prep 215+35 to 219+45
31-Jan-20	Continued clearing 215+00 to 219+00	Shotcrete 214+55 to 216+50
01-Feb-20	No Work	No work
02-Feb-20	No Work	No work
03-Feb-20	Begin Excavation of Bench 4: 214+75 to 216+50; hauling	Shotcrete Bench 3: 216+50 to 218+10
04-Feb-20	Laid out wall face for Bench 4	Grouted void at 218+00; grout plant broken
05-Feb-20	No Work	Grout plant repair
06-Feb-20	No Work	Grouted 8 and voids
07-Feb-20	*	Re-drilled 1 nail; grouted 4
08-Feb-20	No Work	No work
09-Feb-20	No Work	No work
10-Feb-20	No Work	Rain
11-Feb-20	No Work	Drilled 12 nails on Bench 4 (SN374 - 364; SN288); grouted 12
12-Feb-20	Excavate Bench 4: 216+30 to 217+30; spread base stone on temp road.	Drilled 14 nails (SN363 - 350)
13-Feb-20	*	Re-drilled 3 nails; grouted 14
14-Feb-20	Excavate 217+30 to 219+40; spread stone	No work
15-Feb-20	Excavate 218+00 to 219+42; spread stone	No work
16-Feb-20	No Work	Drilled 12 nails (SN349 - 338)
17-Feb-20	Completed excavation of Bench 4: 218+10 to 219+42	Drilled 6 nails (SN337 - 332); grouted 20
18-Feb-20	No Work	Drilled 2 nails (SN331-330); shotcrete 214+80 to 218+60 (as required)

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

Date	Twin K Activity	UMA Activity
19-Feb-20	No Work	Drilled 15 nails (SN329 - 315); grouted 15; wall prep 214+65 to 216+90; nail tests
20-Feb-20	*	Drilled 23 nails (SN314 - 292); nail tests
21-Feb-20	Grading lower access road 216+00 to 218+00	Grouted 23
22-Feb-20	No Work	No work
23-Feb-20	No Work	No work
24-Feb-20	*	Drilled 4 nails (SN287, SN289 - 291); grouted 4
25-Feb-20	Begin excavation of Bench 5: 214+70 to 216+20; haul 27 loads	Shotcrete Bench 4: 214+70 to 219+10
26-Feb-20	Excavate Bench 5: 216+20 to 219+42	Drilled 17 nails on Bench 5 (SN376 - 458)
27-Feb-20	Excavate 218+00 to 219+42	Grouted 7; wall prep (5) 214+75 to 215+65
28-Feb-20	Excavate/haul 218+00 to 219+40	Drilled 23 nails (SN442 - 420)
29-Feb-20	Rock excavation 218+00 to 219+10	Drilled 23 nails (SN419 - 397); grouted 34; wall prep 215+65 to 217+40
01-Mar-20	No Work	Drilled 21 nails (SN375, 377-396); grouted 32
02-Mar-20	Rain	Wall prep 217+40 to 219+10; waiting on concrete delivery.
03-Mar-20	Begin excavation of Bench 6: 214+75 to 216+50; hauled out 42 loads.	Shotcrete Bench 5: 214+75 to 218+35
04-Mar-20	Excavate Bench 6: 216+50 to 218+00; hauled 80 loads out.	Drilled 19 nails (SN460, 521 - 538); nail tests
05-Mar-20	Excavate 217+50 to 219+15; hauled 42 loads.	Drilled 14 nails (SN507 - 520); grouted 27; nail tests
06-Mar-20	Excavate 217+75 to 219+25 for ditch	Grouted 3
07-Mar-20	Grading slope below wall: 217+50 to 219+25	No work
08-Mar-20	No Work	No work
09-Mar-20	Grading slope and ditch area 214+00 to 219+50	Drilled 43 nails (SN464 - 506)
10-Mar-20	*	Drilled 4 nails (SN459, 461 - 463); grouted 25; wall prep 216+00 to 219+00
11-Mar-20	Maintained access road for shotcrete	Shotcrete 214+90 to 218+80
12-Mar-20	Graded for 2nd wall and micropiles: 214+90 to 218+90	Drilled 24 micropiles (MP001 - 023)
13-Mar-20	*	Drilled 18 micropiles (MP024 - 041); grouted 14
14-Mar-20	No Work	No work
15-Mar-20	No Work	No work
16-Mar-20	Standby for grading if needed	grouted 15: 216+00 to 216+70
17-Mar-20	No Work	Drilled 26 micropiles (MP042 - 067)
18-Mar-20	*	Re-drill 2 nails; grouted 40 at 215+15 to 218+00
19-Mar-20	*	Drilled 20 micropiles (MP068 - 087); grouted 17 at 218+10 to 218+90

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
20-Mar-20	No Work	Shotcrete 218+80 to 219+00; shot encapsulation on Rows 4,5, and 6
21-Mar-20	No Work	No work
22-Mar-20	No Work	No work
23-Mar-20	*	Pull tests; Extensions to MPs.
24-Mar-20	*	Re-drill 4 micropiles; drilled 3 micropiles (MP088, 089, 099)
25-Mar-20	*	Pull tests, Extensions to MPs; grouted last SN; grouted all remaining MPs.
26-Mar-20	No Work	Began setting back form and rebar for 2nd wall 218+90 to 218+06
27-Mar-20	*	2nd wall prep 218+25 to 217+25
28-Mar-20	*	No work
29-Mar-20	No Work	No work
30-Mar-20	*	2nd wall prep 219+42 to 217+00
31-Mar-20	No Work	2nd wall prep; rain
01-Apr-20	Maintained access road for shotcrete	Shotcrete 2nd wall: first lift 218+990 to 217+35
02-Apr-20	No Work	2nd wall prep 217+00 to 215+50; attaching nail extensions.
03-Apr-20	No Work	wall prep 215+80 to 214+60
04-Apr-20	rough grading below 2nd wall	No work
05-Apr-20	No Work	No work
06-Apr-20	No Work	Shotcrete: first lift 214+57 to 215+36
07-Apr-20	No Work	Shotcrete: first lift 215+36 to 216+93
08-Apr-20	Grading slopes and access ramp	wall prep 218+84 to 218+54; nail extensions.
09-Apr-20	Grading slopes	Wall prep 218+54 to 218+20; nail extensions.
10-Apr-20	Grading slopes	No work
11-Apr-20	No Work	No work
12-Apr-20	No Work	No work
13-Apr-20	Stone backfill up to shotcrete 214+57 to 218+90	wall prep 218+20 to 217+92
14-Apr-20	*	Wall prep 217+92 to 217+75
15-Apr-20	No Work	Shotcrete encasement on interior wall 214+70 to 219+30; shotcrete 2nd wall 217+35 to 216+93; wall prep 2nd lift 217+75 to 217+55
16-Apr-20	Graded slopes	Wall prep 2nd lift 217+55 to 217+10; nail extensions
17-Apr-20	Graded slopes	Wall prep 2nd lift 217+10 to 217+00 and 218+90 to 219+10; nail extensions
18-Apr-20	Tracking slopes	No work
19-Apr-20	No Work	No work
20-Apr-20	No Work	Wall Prep 218+90 to 219+23; nail extensions



**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

Date	Twin K Activity	UMA Activity
21-Apr-20	Scrape bench to help access	Shotcrete 1st lift; 218+90 to 219+08; shotcrete 2nd lift 217+35 to 218+94; wall prep 217+00 to 216+40
22-Apr-20	No Work	Wall prep 2nd lift 216+40 to 215+65
23-Apr-20	No Work	Wall prep 2nd lift 215+65 to 216+00
24-Apr-20	*	Wall prep 2nd lift 215+65 to 215+00
25-Apr-20	No Work	Wall prep 2nd lift 215+30 to 214+75
26-Apr-20	No Work	Wall prep 2nd lift 215+00 to 214+75
27-Apr-20	Scrape bench to help access	Wall prep 2nd lift 214+75 to 214+57; shoring and bracing back of forms.
28-Apr-20	*	Wall prep 3rd lift 219+10 to 218+75
29-Apr-20	Stone backfill 2nd lift 219+08 to 218+00	Wall prep 3rd lift 219+00 to 218+75
30-Apr-20	No Work	Wall prep 3rd lift
01-May-20	*	Shotcrete 2nd lift 217+35 to 216+00
02-May-20	No Work	Wall prep 3rd lift 218+50 to 217+50
03-May-20	No Work	Wall prep 3rd lift 218+20 to 217+50
04-May-20	No Work	Wall prep 3rd lift 217+75 to 217+40
05-May-20	Grade access for horizontal drilling	Wall prep 3rd lift 217+50 to 216+00
06-May-20	Provided elevations for drain installation	Wall prep 3rd lift 217+25 to 214+95
07-May-20	No Work	Wall prep 3rd lift 216+75 to 214+57
08-May-20	No Work	Bracing on back of forms 214+50 to 215+00
09-May-20	No Work	No work
10-May-20	No Work	No work
11-May-20	No Work	Wall prep top lift 215+00 to 217+50; set bracing 215+00 to 218+00; Drilled 1 horizontal drain (HD-1) at 214+75
12-May-20	Stone backfill ?? lift 214+57 to 215+50	Completed wall prep 214+57 to 219+15; set bracing 215+75 to 219+15
13-May-20	Stone backfill ?? Lift 214+50 to 218+00	Shotcrete 2nd lift 214+57 to 216+90; shotcrete 3rd lift 216+70 to 217+25
14-May-20	*	Completed wall prep top lift 219+00 to 219+28; shotcrete 2nd lift 215+25 to 215+70; shotcrete 3rd lift 215+25 to 217+10
15-May-20	No Work	Shotcrete 2nd lift 214+75 to 215+25; shotcrete 3rd lift 214+75 to 219+15
16-May-20	No Work	No work
17-May-20	No Work	No work
18-May-20	No Work	Nail cutoffs; Drilled HD-2; removed collapsed shotcrete 214+67 to 214+78
19-May-20	*	Shotcrete 2nd and 3rd lifts 214+57 to 217+80

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
20-May-20	Grading for bench access	Shotcrete cancelled due to poor access; drilled HD-3
21-May-20	Stone backfill 214+57 to 217+80; bench maintenance	Drilled HD-4; shotcrete 2nd and 3rd lifts 214+57 to 219+91
22-May-20	Stone backfill 215+00 to 217+25; bench maintenance	Shotcrete 1st, 2nd, and 3rd lifts 218+91 to 219+28
23-May-20	No Work	Re-drill HD-4; drill HD-5
24-May-20	No Work	No work
25-May-20	No Work	No work
26-May-20	Bench maintenance	Shotcrete all lifts 219+38 to 218+00; drilled HD-6 and HD-7
27-May-20	Prepared pad for HD drilling at 216+50	Drilled HD-8; shotcrete 217+50 to 214+57
28-May-20	Graded work pad for HD drilling 217+00 to 217+25	Drilled HD-10, HD-11; shotcrete encapsulation on interior wall
29-May-20	Stone backfill 215+00 to 218+00; graded work pad for HD drains; Laid out ditch line for UMA end treatments.	Began end treatments on HD-1 - HD-8 214+25 to 216+00
30-May-20	Grading bench to finish contours	No work
31-May-20	No Work	No work
01-Jun-20	Stone backfill 214+75 to 219+25; graded pad for HD-13	Drilled HD-13
02-Jun-20	Graded for HD-14; stone backfill 215+00 to 218+25	Drilled HD-14; grouted HD-1 to HD-8: 214+75 to 216+50
03-Jun-20	Graded for HD-15; stone backfill 214+50 to 219+42	Drilled HD-15 and HD-16: 218+25 and 218+50
04-Jun-20	Graded for HD-17 and HD-18; stone backfill 214+75 to 219+25	Drilled HD-17
05-Jun-20	No Work	Drilled HD-18
06-Jun-20	*	No work
07-Jun-20	No Work	No work
08-Jun-20	Stone backfill 214+75 to 219+00; graded for HD-19 and HD-20	Drilled HD-19 and HD-20
09-Jun-20	Graded fill stone and placed geomembrane; began clay cap	Drilled HD-9; end treatments for HD-9 to HD-20
10-Jun-20	Graded slopes and placed clay cap	Grouted HD-9 to HD-20; began staging for HDs above wall
11-Jun-20	Graded slopes and placed clay cap	Re-staging for HDs above wall
12-Jun-20	Stone backfill near ends of wall	No work
13-Jun-20	Grading slopes below wall	No work
14-Jun-20	No Work	No work
15-Jun-20	Graded slopes and placed clay cap	No work

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
16-Jun-20	Graded slopes and placed clay cap; assisted UMA removing excess shotcrete.	Sawcut, hammered top of interior wall down to base grade from 219+00 to 217+00
17-Jun-20	Graded and dressed slopes	Removing wall top; grouted void at 218+02
18-Jun-20	Grading clay cap	No work
19-Jun-20	Spread topsoil; placed geomembrane at wall base.	No work
20-Jun-20	No Work	No work
21-Jun-20	No Work	No work
22-Jun-20	Grading, seeding, cleaning	No work
23-Jun-20	No Work	No work
24-Jun-20	No Work	No work
25-Jun-20	No Work	No work
26-Jun-20	No Work	No work
27-Jun-20	No Work	No work
28-Jun-20	No Work	No work
29-Jun-20	No Work	No work
30-Jun-20	No Work	No work
01-Jul-20	On-site to receive materials for HDs	No work
02-Jul-20	No Work	No work
03-Jul-20	No Work	No work
04-Jul-20	No Work	No work
05-Jul-20	No Work	No work
06-Jul-20	No Work	No work
07-Jul-20	No Work	No work
08-Jul-20	Surveyor on site	No work
09-Jul-20	*	No work
10-Jul-20	*	No work
11-Jul-20	No Work	No work
12-Jul-20	No Work	No work
13-Jul-20	No Work	No work
14-Jul-20	No Work	No work
15-Jul-20	*	No work
16-Jul-20	*	No work
17-Jul-20	No Work	No work
18-Jul-20	No Work	No work
19-Jul-20	No Work	No work
20-Jul-20	No Work	No work
21-Jul-20	Attempt to locate water main	No work
22-Jul-20	No Work	No work
23-Jul-20	No Work	No work
24-Jul-20	No Work	No work

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<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
25-Jul-20	No Work	No work
26-Jul-20	No Work	No work
27-Jul-20	No Work	No work
28-Jul-20	No Work	No work
29-Jul-20	No Work	No work
30-Jul-20	*	No work
31-Jul-20	No Work	No work
01-Aug-20	No Work	No work
02-Aug-20	No Work	No work
03-Aug-20	No Work	No work
04-Aug-20	No Work	No work
05-Aug-20	No Work	No work
06-Aug-20	Conf. Call - Disregard UMA redesign submitted 8/5/20	No work
07-Aug-20	No Work	No work
08-Aug-20	No Work	No work
09-Aug-20	No Work	No work
10-Aug-20	*	No work
11-Aug-20	*	No work
12-Aug-20	No Work	No work
13-Aug-20	No Work	No work
14-Aug-20	No Work	No work
15-Aug-20	No Work	No work
16-Aug-20	No Work	No work
17-Aug-20	No Work	No work
18-Aug-20	No Work	No work
19-Aug-20	No Work	No work
20-Aug-20	No Work	No work
21-Aug-20	No Work	No work
22-Aug-20	No Work	No work
23-Aug-20	No Work	No work
24-Aug-20	No Work	No work
25-Aug-20	No Work	No work
26-Aug-20	*	No work
27-Aug-20	No Work	No work
28-Aug-20	No Work	No work
29-Aug-20	No Work	No work
30-Aug-20	No Work	No work
31-Aug-20	No Work	No work
01-Sep-20	Mtg. to discuss how to complete west end of wall.	No work

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
02-Sep-20	Mtg. to discuss how to complete east end of wall. Decided to cap with riprap.	No work
03-Sep-20	No Work	No work
04-Sep-20	No Work	No work
05-Sep-20	No Work	No work
06-Sep-20	No Work	No work
07-Sep-20	No Work	No work
08-Sep-20	Construct riprap ditch below 2nd wall	No work
09-Sep-20	Riprap on slope 219+50 to 219	No work
10-Sep-20	Finished slope riprap to 218+80. Finished stone backfill of 2nd wall: 219+20 - 219+40.	No work
11-Sep-20	Fine grading at top of 2nd wall.	No work
12-Sep-20	No Work	No work
13-Sep-20	No Work	No work
14-Sep-20	No Work	No work
15-Sep-20	No Work	No work
16-Sep-20	No Work	No work
17-Sep-20	No Work	No work
18-Sep-20	No Work	No work
19-Sep-20	No Work	No work
20-Sep-20	No Work	No work
21-Sep-20	No Work	No work
22-Sep-20	No Work	No work
23-Sep-20	No Work	No work
24-Sep-20	Unload Redi-Rock blocks	No work
25-Sep-20	Placed stone base; placed 2 lifts of block: 214+15 to 214+45	No work
26-Sep-20	Completed final 7 lifts of blocks: 214+15 to 214+45	No work
27-Sep-20	No Work	No work
28-Sep-20	Place shoulder stone; completed block backfill.	No work
29-Sep-20	Place shoulder stone; place riprap in ditch	No work
30-Sep-20	Shift traffic barrier rail; add cones	No work
01-Oct-20	Help with traffic shift	No work
02-Oct-20	No Work	No work
03-Oct-20	No Work	No work
04-Oct-20	No Work	No work
05-Oct-20	No Work	Install HDs: 220+00 to 219+25 (195 LF)
06-Oct-20	No Work	Install HDs: 219+00 to 216+25 (374 LF)
07-Oct-20	No Work	Install HDs: 216+00 to 214+00 (409 LF)
08-Oct-20	No Work	Install HD casings: 220+00 to 214+00; testing

**EXHIBIT - A****Production Log - (Summarized from TDOT Daily Reports):**

Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
09-Oct-20	No Work	HD inclination testing: 219+25 to 218+50
10-Oct-20	No Work	Grouting HD casings: 220+00 to 219+75
11-Oct-20	No Work	No work
12-Oct-20	Excavating ditches for HDs	Testing HDs 218+50 to 217+25
13-Oct-20	Placing base stone and riprap in ditch	Grouting HD casings: 219+50 to 214+00
14-Oct-20	Help with traffic control	Cleanup and prepare for demob
15-Oct-20	Remove portable barrier rail	Demobilize
16-Oct-20	Placed 1 load maintenance stone; cleanup	
17-Oct-20	No Work	
18-Oct-20	No Work	
19-Oct-20	No Work	
20-Oct-20	No Work	
21-Oct-20	Substantial completion; time stopped. Fine grading on shoulder; traffic control	
22-Oct-20	No Work	
23-Oct-20	No Work	
24-Oct-20	No Work	
25-Oct-20	No Work	
26-Oct-20	Final Inspection	
27-Oct-20	No Work	
28-Oct-20	No Work	
29-Oct-20	No Work	
30-Oct-20	No Work	
31-Oct-20	No Work	
01-Nov-20	No Work	
02-Nov-20	No Work	
03-Nov-20	No Work	
04-Nov-20	No Work	
05-Nov-20	No Work	
06-Nov-20	No Work	
07-Nov-20	No Work	
08-Nov-20	No Work	
09-Nov-20	No Work	
10-Nov-20	No Work	
11-Nov-20	No Work	
12-Nov-20	No Work	
13-Nov-20	No Work	
14-Nov-20	No Work	
15-Nov-20	No Work	
16-Nov-20	No Work	
17-Nov-20	No Work	

## **EXHIBIT - A**

### **Production Log - (Summarized from TDOT Daily Reports):**



Note: "\*" denotes activity onsite not directly associated with UMA's scope.

<u>Date</u>	<u>Twin K Activity</u>	<u>UMA Activity</u>
18-Nov-20	Placed sod above and below 2nd wall.	
19-Nov-20	Placed sod.	
20-Nov-20	No Work	
21-Nov-20	No Work	
22-Nov-20	No Work	
23-Nov-20	No Work	
24-Nov-20	No Work	
25-Nov-20	No Work	
26-Nov-20	No Work	
27-Nov-20	No Work	
28-Nov-20	No Work	
29-Nov-20	No Work	
30-Nov-20	No Work	
01-Dec-20	No Work	
02-Dec-20	Punch list complete	



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**MARVIN L. "Marv" HOUSE, P.E.**

1323 Indian Ridge Road  
Blaine, Tennessee 37709  
Telephone: (865) 932-7572  
Fax: (865) 932-1428  
Cell: (865) 567-4195  
[Mhouse@Pc2-inc.com](mailto:Mhouse@Pc2-inc.com)

**SUMMARY OF BACKGROUND:**

Experience in the construction industry, from job set-up to completion, with nationally known construction and engineering firms.

Has extensive experience in heavy construction, building construction, and the water treatment field.

Has had first-hand experience in dealing with architects, consultants, and owners for assigned projects.

Has handled multiple projects at various locations.

Has formed and built a local construction company from inception.

Served on numerous panels for construction dispute resolution.

**AREAS OF EXPERIENCE:**

Company Owner  
Corporate Officer  
Project Management  
Project Engineering  
Assistant Superintendent  
Estimating  
Purchasing  
Construction Management  
Associate Professor  
Disputes Resolution Panel (DRB) Member  
Arbitration  
Mediation

**EDUCATION:**

1968                      Completed one year of a Liberal Arts program at Niagara County Community College in Niagara Falls, New York.

1969                      Attended Tri-State University in the Mechanical Engineering Program at Angola, Indiana.

- 1971** Received an Associate Degree in Civil Engineering from Purdue University at Fort Wayne, Indiana.
- 1973** Received a Bachelor of Science Degree in Construction Supervision from Purdue University.
- 1974** Completed a Treatment Plant Design and Operation course from Sacramento, California.
- 1976** Attended the University of Buffalo Graduate School to work toward a Master's Degree in Business Administration.
- 1979** Taught Statistics and Strength of Materials at Monroe Community College.
- 1978** Attended the University of Rochester Graduate School to work toward a Master's Degree in Business Administration.
- 1980** Received a Master Degree in Business Administration from Goddard College.
- 1990** Taught Construction Finance at the University of Tennessee Graduate School.

#### **PROFESSIONAL REGISTRATIONS:**

##### **Licensed Professional Engineer in:**

<b>Alabama</b>	<b>Certificate Number 14541</b>
<b>Arkansas</b>	<b>Certificate Number 11387</b>
<b>Delaware</b>	<b>Certificate Number 9622</b>
<b>Florida</b>	<b>Certificate Number 0036400</b>
<b>Indiana</b>	<b>Certificate Number 18424</b>
<b>Kentucky</b>	<b>Certificate Number 13809</b>
<b>Maryland</b>	<b>Certificate Number 20919</b>
<b>Michigan</b>	<b>Certificate Number 6201041697</b>
<b>Mississippi</b>	<b>Certificate Number 9354</b>
<b>New York</b>	<b>Certificate Number 062461-1</b>
<b>North Carolina</b>	<b>Certificate Number 11391</b>
<b>Pennsylvania</b>	<b>Certificate Number 034507</b>
<b>Virginia</b>	<b>Certificate Number 015058</b>
<b>West Virginia</b>	<b>Certificate Number 9545</b>

##### **Qualifier for Contractor License In:**

<b>Tennessee</b>	<b>Number 38877</b>
<b>Florida</b>	<b>Number CGC062185</b>
<b>North Carolina</b>	<b>Number 45459</b>
<b>South Carolina</b>	<b>Number 101494</b>
<b>Virginia</b>	<b>Number 270048819A</b>
<b>West Virginia</b>	<b>Number 030624</b>

#### **EMPLOYMENT HISTORY:**

- 2002 – Present** Chairman and CEO of Merit Construction, Inc.
- 1986 – Present** President and Owner of Professional Construction Consulting, Incorporated.

- 1996 – 1997** Volunteered with the Christian Appalachian Project performing various residential and commercial construction work in the Eastern Kentucky area.
- 1986 – 1995** Founder and President of Southern Constructors, Incorporated, a General Contracting Company performing bridge repair, water and wastewater treatment work as well as building construction.
- 1984 – 1986** Vice President for John B. Pike and Son, Inc., Knoxville, TN. In charge of various projects throughout the Southeast. Also set up and organized local office from which work was administered. During this time, also served as President of Duncan, Inc. ( a Wholly owned subsidiary of John B. Pike & Son) doing business in Alabama and Northern Florida.
- 1980 – 1984** Project Manager for John B. Pike and Son, Inc., Knoxville, TN. Total responsibility of a \$37 million "open shop" hospital project. Job consisted of a 250 bed, 13 story addition. 12,000 c.y. of reinforced concrete made up the project. Much renovation coordination and scheduling made this project a challenge to complete. Also oversaw construction of a \$10.5 million bridge redecking and renovation project in Chattanooga, Tennessee. Both projects came in "on time" and "under budget".
- 1978 – 1980** Project Manager for John B. Pike & Son, Inc., Rochester, NY. Total control from job set-up to completion of a \$22 million heavy and highway construction project. Project consisted of nine bridges, two of which were the first double box, cast in place segmental bridges built by the free cantilever method in the Continental United States. The large volume of post tensioning, as well as the 39,000 c.y. of concrete made this tightly scheduled project a challenge to complete. Field employees peaked at about 200 during the summer of 1979. Job completed "within budget", ahead of schedule.
- 1975 – 1978** Assistant Project Manager for John B. Pike & Son, Inc., Niagara Falls, NY (Acting as Construction Managers). Coordination, planning, and follow-up responsibilities for a \$20 million municipal wastewater treatment plant. Since Pike was the Construction Manager, overseeing each subcontractor with regard to scheduling and engineering was also required, as well as keeping the municipality abreast of the construction progress. Some estimating was done for the company plus handling all of the process equipment and piping systems which were encountered. Job completed "under budget" and "on schedule".
- 1973 – 1975** Assistant Superintendent for Cebor, Queens NY. (Field) Scheduled work areas and crews involved with portions of a \$10 million construction project. Follow-up and arrangement of material needed. Inspection and some direct supervision over personnel. Problem solving with owners and engineers on related work. Cost coding and some cost projections. Office management and direct supervision over clerks and typists assigned to the project. Handled coordination between contracts (instrumentation, electrical, etc.)
- 1972 – 1973** Project Engineer for Cebor, Ft. Wayne IN. (Office) Set-up project and assign personnel. Coordinate purchasing and scheduling for project's future. Review and coordinate all submittals and engineering required for the project. Issued and negotiated change orders and backcharge work. Visited the project and filed reports to my superiors.
- 1970 – 1972** Estimator, Expeditor, Purchaser, and Detailer for Fabweld, Inc. Ft. Wayne, IN. Bid, negotiate, buy, draw, and follow-up all aspects of structural steel and

**miscellaneous metal subcontract work to contractors. Gained some first-hand fabrication and erection training.**

## **ACCOMPLISHMENTS:**

**Member of American Concrete Institute (ACI)**  
**Member of National Society of Professional Engineers (NSPE)**  
**Member of the Int'l Assn. Of Concrete Repair Specialists (IACRS)**  
**Member of Association of Construction Inspectors (ACI)**  
**Member of the American Arbitration Association Panel of Arbitrators**  
**Member of the Purdue University Alumni Association**  
**Member of the Appalachian Trail Conference (ATC)**  
**Member of the Tennessee Wildlife Association**  
**Member of The Nature Conservancy**  
**Certified AWS Welder**  
**Certified Concrete Testing Technician, Grade I**  
**Certified Concrete Flatwork Technician**  
**Certified Construction Inspector (CCI)**  
**Certified Construction Project Manager (CCPM)**  
**Certified Scuba Diver with PADI and NAUI**  
**Notary Public at Large in Tennessee**  
**Licensed Operator of wastewater treatment plants**  
**Served on National AGC Highway Committee**  
**Served on National AGC Infrastructure Committee**  
**Served on Board for Tennessee Construction Coalition (TCC)**  
**Served as Panel Advisor to Shelby State Community College (EDI)**  
**Tutored underprivileged children through the New York University Educational System**  
**Vice-President of dormitory at Tri-State College**  
**On the Dean's List Senior year of college**  
**Past President of South Knoxville Sertoma Club**  
**Past President of Gov. John Sevier Memorial Association**  
**Past Cubmaster of local scout troop**  
**Past Member of Construction Specification Institute (CSI)**  
**Past Member of American Society of Civil Engineers (ASCE)**  
**Past Member of the Rochester Engineering Society (RES)**  
**Past Member of American Quarter Horse Association (AQHA)**  
**Past Director and Served on Board of Knoxville Builders Exchange**  
**Past President of Resource Valley Construction Training Council (RVCTC)**  
**Past President of the Knoxville Branch of Associated General Contractors of East Tennessee (AGC)**  
**Past Negotiator for New York AGC 1978 Upstate 3 Year Carpenter Contract.**

## **REFERENCES:**

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## H. CLAY GRIFFIN

EDUCATION      BS, Mechanical Engineering - Vanderbilt University - 1981  
Executive Development Program - Univ. of Tennessee - 1998

EXPERIENCE      **Rembco Geotechnical Contractors, Inc.** Knoxville, TN  
VP of Operations – 1993 to 2001  
President – 2001 to 2019

**Sonalysts, Inc.** Arlington, VA  
Principal Engineer - 1991 to 1993  
Served as technology consultant to several clients. Designed equipment and system architectures for specific applications in large-scale processes.

**Global Associates, Ltd.** Arlington, VA  
Program Director - 1988 to 1991  
Responsible for all technical and administrative aspects of contract performance for many government and commercial clients. Also provided technical consultation in acoustics and sensor systems.

**Naval Sea Systems Command** Arlington, VA  
Program Engineer - 1987 to 1988  
Managed the development, production, and field support of sonar sensor and processing systems.

**Naval Weapons Support Center** Crane, IN  
Project Manager- 1985 to 1987  
Responsible for all technical documentation, product testing, failure analysis and on-site troubleshooting for the Navy's sonar transducers.

Project Engineer - 1982 to 1985  
Designed and developed hydroacoustic test facilities and failure analysis techniques.

MEMBERSHIPS      American Society of Mechanical Engineers  
American Society of Civil Engineers

## **SPECIFIC DRILLING & GROUTING EXPERIENCE**

At a Scott Paper plant in Mobile, AL, grouted alongside an underwater effluent pipeline crossing. The 6 foot diameter 7/8 inch wall thickness pipeline had moved and leaked at a joint. The damaged section was located under about 25 feet of water and 25 ft of industrial river bottom mud. Ran grout tests to determine optimal grouting parameters. Other features of the job included locating the edges of the pipe without damaging it, running maximum grout rate tests, and carrying out before and after tests of stabilization of the mud and sand in the bedding area. A total of 6,400 gallons of an acrylic grout was injected.

Designed and carried out grouting at numerous sinkhole sites including the mainline of railroad, a waste water treatment plant with structural settlement, a city street, and a supermarket in a shopping center with structural damage to the building. In designing these grouting programs, determined injection pattern, drilling depth, injection rates, volumes and pressures, along with grout mix design.

Developed and constructed a temporary shoring system to allow excavation of large below-ground storage tank in a radioactive hazardous waste site. The shoring, installed before any excavation began, consisted of micropiles grouted to below excavation level with their tips restrained by steel walers and grouted soil anchors. This unique shoring system allowed rapid excavation with minimal exposure to environmental hazards.

Developed and implemented a procedure to remediate a 42" caisson foundation that subsided after being loaded by the completed structure. The procedure involved coring through the caisson and compaction grouting between the caisson and competent bedrock to replace the underlying soil with high strength grout. The program successfully established a large continuous column to bedrock as verified by additional coring. Additionally, the caisson was lifted toward its original position, overcoming approximately 600,000 pounds of combined skin friction and dead load.

Experienced with compaction grouting, chemical grouting, cement grouting, micropiles, epoxy coatings and overlays, micropiles, soil nailing and anchoring, rock bolting, as well as with the pre-placed aggregate method of construction.